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MARTIN WALDSEEMÜLLER AND THE EARLY LUSITANO-
GERMANIC CARTOGRAPHY OF THE NEW WORLD.

AN ADDRESS*

BY

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Twenty-five years ago the honoured President of this Society chose as the theme for his annual address, "What we know of maps and map-making before the time of Mercator," giving in brief sketch a review of the progress of cartographical science through a period of 2,000 years. He said:

I have sought to bring together and arrange in something like connected order the principal facts in the history of cartography down to the time of Mercator. I have attempted to do this because, as far as I know, the facts have never been brought together as a whole.

This was the *raison d'être* of that admirable address.

In reading its pages, particularly those reviewing the earliest cartography of the New World, I have noted, however, statements here and there quite correct, in the main, according to the knowledge of the time, but which the investigations of the years since then have shown to be inaccurate. It is there stated that "the first map on which the discovery of Columbus appears is that of John Ruysch;" that "The Stobnicza Map is the first to present the spherical surface of the earth upon a plane;" that the "Apianus Map has acquired a celebrity as the first map on which the name AMERICA appears." Although this paper made no pretence to an exhaustive treatment of the subject, I could but think, on reading it, how fruitful have been the last twenty-five years in this field of

* The address was illustrated.

study; how much that had been written then needs correction now; how much, indeed, that was written ten years or less ago needs revision; how much there is yet to be done before we are brought to realize fully the value of these documents.

Great, I know, would have been the interest of Judge Daly in each new discovery, and quick he would have been to catch its scientific import, alert to correct the record of yesterday by the newly-acquired information of to-day.

In this day, when a new interest seems to be awakened in the earliest cartography of the New World, occasioned by a fuller appreciation of the historical value of early maps, and by recent discoveries, to which so much importance clearly attaches, it has occurred to me that a review of that cartography in the light of present knowledge would appeal to this Society as a theme well worth an evening's consideration.

My purpose, therefore, in this address is to trace the development of the New World cartography from its earliest beginnings until fairly accurate notions were entertained concerning the Western Hemisphere, with a brief reference to some pre-Columbian maps; to call attention to some of the problems which have arisen concerning this cartography, and to the solutions which more recent investigations have advanced for a number of these problems, and to consider especially the influence of Martin Waldseemüller and the St. Dié School.

Of the maps to be exhibited not a few are comparatively well known, and their significance fully understood. Some of the more important ones, however, are little known, having been discovered recently, among which may be named the CANERIO, the GLAREANUS, the KING, and the WALDSEEMÜLLER.

I wish here to speak a word of commendation for such investigators as Harrisson, Nordenskiöld, and Kretschmer, for their critical and systematic work in this field in the last twenty-five years, and for their efforts, though wanting completeness, to make many of these early maps accessible in facsimile reproductions, and for the encouragement they have given the desire for a more intimate acquaintance with these valuable historical documents. It is a surprising fact that very little has been done in our own country to encourage a systematic and critical study of old maps, very little to make them accessible to students. A few of the better-known printed maps of the day of discovery and exploration have reappeared in works treating the subject of early American history, and their importance has been noted; but in many of these reproductions found in

American books it is only a small section of the map that has been reproduced, and so imperfectly has the work often been done as to render it of little value. There are many manuscript maps preserved in European libraries of the highest value for the history of discovery in America which are little known, which never have been critically examined, and never have been reproduced even in part. Here is a field which American scholarship should enter, here is opportunity for a monumental publication—may I say for a monumental atlas?—of cartographical documents relating to a most interesting and important period.

No activity of the period which we designate the Renaissance was more fruitful of important results than that having to do with maritime discovery and exploration. Just how early navigators, urged on by practical interests, began to feel their way down the coast of Africa, or to sail the Atlantic in search of those islands which had an existence in the literature of tradition, and to penetrate the region of the north, we do not know. We, however, find the fact clearly established that by the opening of the fifteenth century there was a lively interest, particularly among the peoples of the Mediterranean lands, in such enterprises as were undertaken for the purpose of opening up communication with remote regions of the earth. Here we meet with a veritable renaissance of geography. Our oldest maps of real value, which seem to owe their origin to these newly-awakened interests, are the portolanos or coast charts, constructed at first for the region of the Mediterranean. These portolanos were the work of the sea-faring peoples of Italy and the coast districts of the western Mediterranean, who were the immediate precursors of the trans-Atlantic explorers, and they possess a real value, in striking contrast with the world-maps of the Middle Ages—an individuality which insured them for many years a place of commanding importance. They form the basis of many of the maps in which the New World is first presented.

When Chrysoloras and Aurispa, with their companions among the early Humanists, were introducing into Italy the re-discovered literature of Ancient Greece, along with their treasures came the text of Ptolemy's Geography. "It had the effect of an important discovery, which seized men's minds, at first with even more force than the discovery of the New World by Columbus. Not a new world, but the very world in which one was living, had been extricated from the darkness in which it had been hidden during a whole millennium."

Ptolemy became anew the teacher of geography to the peoples

of Europe, and his authority was very tardily called in question even after the discovery of the New World. Long after the region had been explored lying beyond the world of which Ptolemy had knowledge, the work of that Alexandrian geographer was in great favour. "No less than thirty editions of his work were printed before 1570, and of these twenty-six contain about 700 old Ptolemy maps and about 400 *tabulæ novæ*." If a comparison is made with the small number of maps which were printed before the year 1570, some impression of the influence of the Alexandrian geographer, after fourteen hundred years had passed, may be gained. A study of modern cartography should begin with Ptolemy—the Ptolemy of the Renaissance.

The oldest known copy of his work, to which in addition to the usual 27 maps new maps have been added, is found in the library of Nancy, France. Considering Greenland to be a part of the western continent, we find here one of the oldest known maps in which any part of the New World appears. It is stated in the accompanying text that it is the work of Cladius Clavus, and it is probably based upon the observations of northern explorers. Though a sketch far from accurate in its details, it has the merit of exhibiting accurately the relative position of Iceland and Greenland, that which is not true generally of the maps of Columbus's day. To the significance of this fact Professor Fischer, the fortunate discoverer of the long-lost Waldseemüller world-map of 1507, in his excellent critical study of the discoveries of the Northmen in America, has recently directed attention. It is probable that to inaccurate description and to the confusion of names such errors as the placing of Iceland west or south of Greenland are due. In the majority of the maps of Donnus Nicolaus Germanus, that cartographer, to whom we owe so much for his skill in the reproduction of the Ptolemy maps, the above-mentioned error is perpetuated. It was unquestionably from this cartographer that Waldseemüller drew his information concerning the northern regions which he reproduces in his map of 1507. Aside from the features referred to as appearing in the early editions of the Ptolemy geography, the general influence of this work in encouraging maritime enterprises which ultimately led to the discovery of America is an all-important fact.

Not, however, until 1504 does there appear a Ptolemaic world-map which makes mention of the discoveries of Columbus, for I take it the brief legend appearing in the Reisch map of the *Margarita Philosophica* of that date has reference to such discoveries. On the indicated land connection between Asia and Africa we read: "Here

there is no land, and only a sea, in which are wonderfully large islands which Ptolemy did not know." We shall later see America emerge in this region on a very important globe but recently discovered.

It is a belief, which has found very general acceptance for many years, that when Columbus was in search of aid for his great maritime enterprise a letter and a map were sent to him by the Italian cosmographer Toscanelli, in which it was clearly set forth that a voyage to India by way of the west was altogether possible. The authenticity of both letter and map, which so long have done service in exhibiting the geographical views of Toscanelli, and which by many have been thought to have served Columbus as sailing directions on his first voyage, has been impeached by the recent critical studies of Vignaud and de la Rosa. They present a strong case against d'Avezac, who believed Toscanelli to have been the "initiator of the discovery of America," through the suggestions in his letter. The map, according to the letter, presented little that had not already appeared on other maps of the century—Antillia, St. Brandans, Cape Verde, the Azores—excepting, perhaps, the cartographical demonstration that India did not lie so far away from the shores of western Europe as was commonly believed.

Respecting the authenticity of the Behaim Globe a like question has never arisen. This globe exhibits features in common with the so-called Toscanelli Map for the Atlantic region. It was in the year 1492—the year in which Columbus sailed on his first voyage—that Martin Behaim, a native of Nuremberg, constructed this globe, one of the oldest of which we have knowledge. It is drawn on parchment, and is pasted on a sphere having a diameter of about 18 inches.

Its legends, in the old German dialect, combining historical and geographical record, are not its least interesting feature. Many of the details Behaim derived from the narrative of Marco Polo, and from the maps of his own and of the preceding century. He lived in Portugal in the years when Columbus was seeking aid for his expedition, and it is altogether probable that he talked over with him the problems of a western voyage. If this globe is so intimately associated with the plans for western exploration as has been made to appear, though exhibiting no part of the western continent, it should find a place in any cartographical history of America.

The map in which maritime exploration, prior to Columbus, is best expressed is that by Henricus Martellus Germanus. It was

drawn in Rome in the year 1492, perhaps from information which had found its way thither from Portugal. It expresses, in particular, the conception of the geography of Africa which was entertained as a result of the Portuguese expeditions in that direction. It seems to indicate that a waterway was open to India. For the student of Portuguese explorations it is a map of special importance, as may be seen in the nomenclature and in the legends.

However numerous may have been the maps drawn by State cartographers, who accompanied all official expeditions to the west, or by the pilots of those expeditions, or by those who participated in clandestine voyages and brought back information which was incorporated in early maps, the oldest one known to us to-day is the chart which was constructed by Juan de la Cosa, a pilot who accompanied Columbus on his second voyage. It bears date 1500, which we find written beneath the vignette of St. Christopher appearing on the western border.

There were many expeditions to the west between the years 1492 and 1500, official and otherwise, and doubtless many maps were drawn to represent the location and the contour of the lands discovered. Not a few records are known which tell of such work having been done. Probably some of these treasures lie hidden away in little-known archives, perhaps many of them were early destroyed because so soon out of date, and therefore considered valueless.

But none of these maps is known. The Juan de la Cosa map, therefore, has the distinction of being the oldest map bearing date on which the discoveries of Columbus are indicated, and of being the only Spanish map known of any considerable importance produced in the first thirty years after Columbus brought back word of his discovery. It, however, is not certain that we have in this map, so highly prized, and indeed so valuable, an original. On the contrary, it appears to be a copy, perhaps a copy of a copy—a statement which holds true of the great majority, if not all of the early manuscript maps.

The maps of that day contained information gathered from many and various sources, and in the transcriptions strange errors appear.

Among the many names to be seen on this La Cosa map not a few are unintelligible, occasioned, it is probable, by a careless reading of an original by the copyist. Such errors are considered to be strong evidence that the map is a copy of an older one.

We cannot learn from it what La Cosa thought of the relation of the west continental land to the region of eastern Asia described

by Marco Polo. The map gives rise to many questions concerning the knowledge of the western region at that day. Had the coast which is indicated been traversed from the Cabot landfall in the north to the region touched by Cabral in the south? Was Cuba then known to be an island? It seems to me to be the most reasonable assumption that La Cosa had actual knowledge from sources which we do not now know, and that we do not have here merely an instance of good guessing.

The map clearly belongs to a transitional period. Rich with its colours of red, and blue, and gold, it is an object of art as well as an instrument to serve a practical purpose. In true mediaeval style GOG and MAGOG appear in the region which legend assigned to them. Kings are represented on their thrones, buildings indicate the location of cities. The three wise men appear coming out of the east, led on by the Star of Bethlehem. Pope Alexander's Line of Demarcation is drawn, dividing between Spain and Portugal the regions explored and to be explored. Omitting further reference to descriptive details of the map, it may be said that it embodies the results of the first three voyages of Columbus, the first and second voyages of Vespuccius, the voyages of Diego Cam and Cabral; hence, though largely a Spanish map, it is to some considerable extent of Portuguese origin.

As early as 1500 the expeditions of the Portuguese to the west were attracting attention. In that year Cabral, by good fortune, probably not in accord with a prearranged plan, had touched the east coast of Brazil, and word was immediately carried home that a new region had been discovered, to which it was proposed that the name Terra Sanctæ Crucis, or The Land of the Holy Cross, should be given.

The brothers Gaspar and Miguel Cortereal, between 1500 and 1502, sailed into the region entered by the Cabots but a short time before. They were lost in shipwreck, but the meagre records of those first official Portuguese expeditions to the New World seem especially to have impressed the map-makers of that day, since most of them gave prominence to the Cortereal discoveries in their productions. It was especially the knowledge of these expeditions which, reaching Duke Hercules of Ferrara, awakened in him a desire to receive, in full, details respecting trans-Atlantic voyages. To Cantino, his envoy at the Court of the King of Portugal, he therefore gave instructions that a chart should be obtained which would give him information concerning what, up to that time, had been accomplished in the way of discovery. Cantino forthwith

executed his commission, and after a somewhat eventful history, that map is now preserved in the Royal Estense Library of Modena

It is a world-map in colours, omitting the eastern part of Asia, and having an abrupt termination in the west. Probably its most striking feature is the indication of a continental region lying northwest of Cuba. Several theories have been advanced concerning the significance of that continental land—that it is Cuba, that it is Yucatan, that it is Asia. It is now the generally-accepted opinion that Cantino actually intended to represent a newly-discovered continental region, and that he was in possession of knowledge quite sufficient to warrant this belief. Of his 22 names appearing along the coast, not one is given on the La Cosa map, not one is mentioned by Columbus. It is especially unfortunate that this western section of the map has been cut away. We do not know how far he believed that the indicated land extended to the west, how far to the south. It is altogether probable that it was identical with the Canerio map, indicating before its mutilation an indefinite stretch of land to the westward, an abrupt termination to southward, with a wide strait between the land to north and south. The Demarcation Line appears, as does the land supposed to have been found by the Cortereals. The West India Islands are represented in large numbers, though too far to the north; and to Cuba is given that peculiar hammer-like shape with which we shall meet in many later maps, especially of the Lusitano-Germanic type.

Although the Cantino map seems to indicate a continental region in addition to the islands which had been visited and named by Columbus, it seems very reasonable to assume that the maps of oldest date must have exhibited the lands discovered in the west as a group of islands. In the information furnished by Columbus respecting his first expedition, he wrote, "I have found many islands." Of the islands he was certain; of his having touched the continent of Asia some doubt remained. But of this type of map none is known of earlier date than 1502, which is the date generally accepted for a map which I have called a Munich-Portuguese map, on which sketch, however, there appears neither date nor the name of the cartographer. Like many other maps of that early day it seems, in certain parts, not to be quite up to date, apparently wanting the knowledge which it was generally supposed was possessed at the time when the map was constructed. It exhibits Cuba as an island of great length, extending from southeast to northwest, and the coast of South America with an intentional

break of considerable extent in that region where the Amazon flows out into the Atlantic. To the land of Cortereal a peculiar contour is given, with its eastern shore the same as we find it represented in the Cantino and the Canerio maps. The north continental region is wanting.

As a map exhibiting this apparent want of knowledge up to date respecting discoveries in the west we find no better illustration than is furnished by that of Pilestrina, drawn about the year 1502. It is clearly of Portuguese origin, omitting the continental region of the Cantino map, Cuba and the Spanish Antilles, "although these were discovered, drawn, and described a number of years before Cabral or Cortereal ever crossed the Atlantic." The Portuguese possessions, however, are presented somewhat in detail as the region entered by the Cortereals in the north, and Brazil the region touched and claimed by Cabral in the south.

About twelve years ago, while searching the archives of the Department of Marine in Paris, Gallois discovered a most important marine chart, which is unquestionably of Portuguese origin. It is drawn on parchment, and is the work of a skilled artist. Though undated, it bears the inscription, "Opus Nicolay de Canerio Januensis." Of Canerio very little is known aside from the information conveyed by his chart. That he was proud of his countryman Columbus appears evident from a legend written over the Antilles designating these as "The Antilles of Castile discovered by Collonbo, a Genoese Admiral." It exhibits a striking resemblance to the Cantino chart in its presentation of Greenland, here clearly indicated as a peninsula of Europe, in its presentation of Newfoundland, of the continental region in the northwest, of Cuba and the position of the larger islands of the Antilles, of the coast of South America, of the African and of the Asiatic coasts, which, it should be noted, are no longer Ptolemaic. The recently-discovered Waldseemüller map of 1507 gives unmistakable evidence of an acquaintance with the map of Canerio or a map of exactly this type. It is a map rich in its nomenclature, more nearly accurate in its details, and in its influence of greater significance than the Cantino.

The geographical nomenclature of the early day exhibits some striking peculiarities, and many of these appear on the Canerio map. "The Cape of the Meeting," "The Cape of the Cat," "Cape of the End of April," "The Lake of the Thief," "The Islands of the Giant," "The Coast of the Courageous Man," "The Dragon's Mouth," "The Bay of All Saints," with many other names of like character derived from saints' days, from captains of vessels,

names descriptive and names derived from events thought worthy of being thus recorded.

It is an opinion often expressed in the accounts written concerning the history of discovery in America that the early explorers believed the newly-found regions to be a part of Asia. Columbus is cited as having professed to believe this until the end of his days. But he wrote particularly of islands discovered in his first voyage; in his second he compelled the officers of his vessel to swear, it appears against the convictions of some, that Cuba was a continent; and yet in his third voyage, when he discovered the main land near Paria, and beheld the mouth of the Orinoco, he expressed the conviction that the mighty river came not only from an immense region at the south but from one wholly unknown. In his fourth voyage he made search for a strait through which he might pass to the waters of India, but, failing this, his belief concerning the Asiatic connection, it appears, was confirmed.

I think, with Harrisse, we may say that the moment search began for a waterway leading from Oceanus Occidentalis to Oceanus Orientalis, that moment opinion began to become conviction that a new continental region had been found, a new world had been discovered.

In 1497, John Cabot said that the land he had visited and explored was the country of the Great Khan; but in explaining the project to Soncino in December of that year he expressed the belief that Cathay was on the other side of the newly-discovered land.

In 1503, Vespuccius declared that he had been to a new world, and he followed the coast for many leagues in search of a strait through which he might pass to the Old World.

Humboldt observes "that the more it became gradually recognized that the newly-discovered lands constituted one connected tract, extending from Labrador to the promontory of Paria, the more intense became the desire of finding some passage either in the south or at the north." To find this waterway was the fixed purpose of a number of the explorers, and this at an early date.

What they could not find—though many of the map-makers indicated its existence in the region of Central America—it seems that we are now on the eve of discovering.

While the peculiar configuration of the Cantino and the Canerio charts has occasioned some doubt as to just the belief entertained concerning an Asiatic connection, there appears in the map by John Ruysch, in a Rome edition of Ptolemy, a configuration which

in this particular clearly indicates a compromise. It first attracts by reason of its peculiar projection. It is one well executed, exhibiting in part the Ptolemaic traditions, in part the latest Spanish and Portuguese information concerning the New World, though the evidence is unmistakable that a Portuguese world-map was its real basis.

Greenland appears as a part of Asia, from which region the coast-line sweeps southward, passing Baccalaus and Terra Nova—that is, Newfoundland—then extends westward to join the line which is indicated on the Ptolemaic maps. In the sea which washes Asia is inserted an inscription to the effect that Cipango is omitted because it is thought that country is identical with the Spanish Hispaniola.

On the west of the north continental land the legend appears stating that thus far the ships of Ferdinand, King of Spain, have made their way. To the continent of South America the name "Land of the Holy Cross," or the "New World," is given, with a statement in an adjoining legend that "this country is generally considered to be another continent; that because of its magnitude they called it a New World, for, indeed, they have not seen the whole of it nor at this time have they explored beyond this point; therefore this map is left incomplete for the present, since we do not know in which direction it trends."

Ruysch was a German, who, like many of his fellow-countrymen in those days, found occupation in Italy, and who probably carried with him from his native land knowledge he had there gained concerning the New World. May it not have been true that from the *Cosmographiae* of Waldseemüller or from his world-maps he acquired considerable information? We read on the east coast of South America this inscription: "Omnium Sanctorum Abatia"—a name which is considered to be the unmistakable evidence of the influence of the St. Dié School of Cartography.

That the Portuguese influence was greater than that of Spain in determining the general appearance of the newly-discovered lands on the maps which are now known of that early day is quite certain.

Why this should be true is not easily ascertained. Perhaps the policy of Portugal was a more liberal one respecting the distribution of knowledge acquired. There are many evidences, at least, to support the belief that a liberal policy was followed. For a number of years, however, following the earliest work of Waldseemüller at St. Dié, it is the German cartography of the New World

which is the most important—German cartography influenced by the Portuguese.

After the hardy navigators who so rapidly took possession of the globe those who rendered the greatest service to geography were the astronomers and the mathematicians, for they alone were able to furnish the information necessary to determine the exact position of places on the earth's surface. It was the good fortune of Germany exactly at this time to be particularly interested in a renaissance of astronomy and mathematics. Here the humanistic movement gave encouragement to a spirit of patriotism, and among other interests to which they directed their talents was that of history and geography. The names and locations of places which they found in the old Ptolemaic maps they soon observed were antiquated and inaccurate; there was need of new maps, and they set themselves to their production. With these efforts modern German cartography had its beginnings.

Not, however, until Duke René of Lorraine became a patron of learning, with a particular interest in cosmography or geography, do we meet with results of far-reaching importance in the cartographical studies of the Germans.

Under the encouragement of this enlightened prince the little town of St. Dié became a centre of culture. Here was organized the Vosgian Gymnasium, a society of learned men not unlike the Platonic Academy of Florence or the Danubian Society of Vienna. Of this St. Dié coterie none were more prominent than Basin de Sandacourt, the translator of the "Four Voyages" of Vespuccius from the French into the Latin; Lud, the ducal secretary and author of an important little work of but few pages, which he called "The Speculum"; Waldseemüller, the professor of cosmography, the author of the *Cosmographiae Introductio*, and a cartographer of great distinction, who, with Ringmann, planned and carried well on to completion an edition of Ptolemy, which in 1513 was printed in the city of Strassburg. It was probably as early as 1505 that the plan was under consideration for a new translation of Ptolemy from the Greek into the Latin; and that thought, perhaps, had its inspiration in the letters of Vespuccius giving an account of his four voyages, together with some new charts which but recently had fallen into the hands of Ringmann. These charts, says Lud in his *Speculum*, came from Portugal, which, if true, leads one to the belief that they exhibited genuine Vespuccian data.

Whatever the truth concerning the origin of these maps "that

determination has been the starting-point of a most important evolution in the cartographical history of the New World."

"I think you know already," wrote Waldseemüller in April, 1507, to his friend Amerbach, in Basel, "that I am on the point to print in the town of St. Dié the cosmography of Ptolemy, after having added to the same some new maps." While great interest centres in these "new maps," prepared for the proposed edition of Ptolemy, a greater interest now centres in the map or maps to which it is thought Waldseemüller alludes repeatedly in the years from 1507 to 1511, and especially in his *Cosmographiae*. In the dedication of this little book to the Emperor Maximilian, he says: "It thus happened in collecting for my own book, aided by others, the books of Ptolemy and collating them with the Greek texts, and in proposing to add thereto an inquiry into the Four Voyages of Vespuccius, I have prepared for the common use of students, and as a sort of preparatory introduction, a figure of the entire earth, as well in the form of a globe as a representation on a plane surface." Conjectures concerning this map on plane surface have been many, since all trace of it had been lost until a short time ago. Some, indeed, were inclined to doubt that Waldseemüller completed the work to which he here alludes.

Waldseemüller says further in a passage of his *Cosmographiae* wherein he gives a description of his new map: "It is my purpose in this book to write an introduction to the cosmography which we have drawn upon a globe as well as upon a plane surface. In the construction of the globe we have been very restricted as to space. But we have had more room in making our map, on which, in the manner as the country people are accustomed to mark their fields and to define the boundaries thereof, we have been careful to distinguish the principal countries of the earth by means of the standards of the rulers." Here follows a somewhat minute description of the way in which he represented the countries of Europe, Asia, and Africa. Adding, "finally, in the fourth part of the earth discovered by the illustrious kings of Castile and Portugal, we have placed the standards belonging to their kingdoms. And what is particularly to be noted, we have marked those coasts which are fringed with shoals, and where consequently shipwreck is to be feared, with figures of the cross, which will serve to point them out."

This is the map now attracting so greatly the attention of students of cartography, and which about two years since was discovered by Professor Fischer of Stella Matutina College, Feldkirch, Austria, in the archives of the Wolfegg Castle.

The size of the map is about eight feet by four feet, which fact suggests that it was intended as a wall map—a form which was little calculated to insure it against destruction. That its twelve parts were bound together probably preserved it. With this 1507 map which Professor Fischer discovered is likewise bound a second one by Waldseemüller, bearing date 1516, and of scarcely less importance. The cover of the collective work exhibits the book-plate of the Nuremberg mathematician, John Schöner.

It is not too much to say of this first work of Waldseemüller that it is the most important engraved map of the first 50 years after the discovery of Columbus, if, indeed, it is not the first printed map on which appears the New World, and that it is the oldest map to bear the name AMERICA—the “baptismal certificate of the New World,” as Professor Fischer calls it in a letter I have received recently from him. Printed as it was, according to a legend on the 1516 map, in 1,000 copies, it is reasonable to suppose that it found its way into all sections of the country in which an interest was taken in maritime discovery.

He had followed in its preparation, as he tells us, Ptolemy for certain regions; for other regions the charts which had been received but a short time before in St. Dié, unquestionably from Portugal. The entire map, however, exhibits in its peculiar projection, as in other respects, a striking originality.

As inset map in the north polar region there is presented on the left the Old World with the portrait of Ptolemy, and on the right the New World with the portrait of Vespuccius. Quoting the *Cosmographiae* again, “We have divided the matter following Ptolemy in the making of the planisphere, except concerning the new lands, and some few other regions, but on the globe which accompanies the planisphere we have conformed to the description of Vespuccius.” Can Waldseemüller’s reference here be to the inset maps? I am inclined to think so.

Waldseemüller exhibits in his map, however, an inconsistency, showing in the small inset map of the New World a connection between the land to the north and to the south, and in the large map the Strait which all German maps of early date exhibit, with but one or two exceptions, and these exceptions are Waldseemüller maps.

From what I have stated, it is clear that Waldseemüller, as a cartographer, had great respect for Ptolemy, but he observed that “these explanations will be sufficient if we add here that we have not exclusively followed Ptolemy in the delineation of our general

map of the world; especially as to the new lands, in regard to which we have found the equator to occupy on marine maps a position different from that laid down by Ptolemy." How puzzling this matter respecting the location of the equator was to certain early cartographers is well presented in the so-called KING chart of about the year 1502. The Ptolemy maps represented the equator as passing through Western Africa north of the Gulf of Guinea, but Portuguese exploration had shown conclusively that this was incorrect; that the equator passes through the Gulf itself. Our cartographer in the King chart has indicated two equators, one entering Africa on the east and extending westward, another beginning at the east coast and emerging near the proper place on the west. Waldseemüller followed, at least in his maps for the edition of Ptolemy, the construction found in the marine charts.

As we have no earlier suggestion that to the New World should be given the name AMERICA than appears in Waldseemüller's *Cosmographiae*, and as he alludes in that work to his map of the world, we should naturally expect that name to appear somewhere in the western region; and so it does, written across South America, clearly indicating that he intended the name should be applied to the region which Vespuccius had described in his Four Voyages. America did not yet include the land to the north and the neighbouring islands of the West Indies.

It will not be without interest to attempt to trace, particularly through the German world-maps, the influence of Waldseemüller and of the St. Dié School.

In the passage alluding to the map just described, Waldseemüller, as I have stated, refers to a globe which he had constructed; this is, at least, the interpretation of the statement "quam nos tam in solido quam plano depinximus" (which we have depicted both on a globe and on a plane chart), that has found general acceptance, but I feel inclined to doubt the interpretation.

Such a globe bearing the unmistakable mark of Waldseemüller has never been discovered. However, in the collection now belonging to Prince Liechtenstein is a somewhat crudely-executed gore map. As a title to the lithographic reproduction, which I have recently received through the courtesy of the Prince, is the following statement: "First printed globe. Martin Waldseemüller. Probably belonging to his book *GLOBUS MUNDUS*, which appeared in 1509." But there is very little evidence to show the connection of Waldseemüller with the *GLOBUS MUNDUS*, or that these gores were constructed for that little work. Between the lands to north

and south there is no connection indicated. It is a work, therefore, of the Lusitano-Germanic type, if not a Waldseemüller map. Until the recent discovery of Professor Fischer, to these gores belonged the distinction of being the oldest known printed map on which the name AMERICA appears, if we accept the date 1509.

To a second gore map, for which the claim has been advanced that it is the work of Waldseemüller, or the copy of an original by him, because found in an edition of his *Cosmographiae*, reference may here be made. The copy is usually referred to as the Tross Gores or the Boulengier Gores, and is one of the choice treasures of the Lenox Library. It bears no date, but is thought to have appeared some time between 1514 and 1518. It is a copper engraving, well executed, across which appears the legend, "Universalis cosmographie descriptio tam in solido quem plano"—a quotation, with a mistake or two, from Waldseemüller.

The continental land to the north-west is clearly of his type of map, showing a break of considerable width in the continuity of the east coast-line in the region of Central America. Across the southern continent appears the inscription "AMERICA NOVITER REPERTA," while the north bears only the name "Nova."

Of no less interest than the gores to which I have just called attention are the two maps discovered recently by Professor Elter of the University of Bonn, in a work by the theologian and humanist Glareanus, a native of Switzerland—maps which bear a close resemblance to two others discovered by Professor Wieser a few years ago in Munich. One of these Bonn maps bears the inscription "Coloniæ Agrippinæ anno M.D.X." Professor Elter refers to it as the oldest map bearing the name America, very naturally overlooking the Waldseemüller map of 1507. It gives unmistakable evidence of an acquaintance with the work of Waldseemüller—indeed it is almost an exact reproduction of that map, though greatly reduced in size, and this may be seen in the form in which it is projected, in the contour of both the Old and the New World, in the legends which appear in the border as in those which appear on the lands of the west. Reference is made to the discoveries of Vespuccius, and to his Four Voyages, in which the new lands are described. The contour of the north continental region is strikingly that of the Canerio type, while that of the south is so sketched as to give evidence of an advance in knowledge over Canerio respecting the general outline; conjecture, however, seems still to guide the pen of the draughtsman in much that he has attempted to show of the world. In his writings

Glareanus appears to have exhibited considerable interest in the problems of map construction, but he is not at all times inclined to give full credit for the sources of his cartographical or geographical information.

The Stobnicza maps, to which so much importance hitherto has been attached, are rude woodcuts, and are to be found in a very rare work on the subject of cosmography. They were produced in Cracow, Poland, in the year 1512. In the discovery of Professor Fischer they have been deprived of almost every claim which in the past has given them distinction. That we have in this work the oldest map in which North and South America appear as a continuous body of land can no longer be claimed for it, since the inset map of the Western Hemisphere, a part of the Waldseemüller of 1507, is clearly its original. The claim that these are the oldest maps on which the earth's surface is represented as divided into two hemispheres falls, as does the claim for originality of projection.

The *ORBIS TYPUS UNIVERSALIS* of the 1513 edition of Ptolemy has received new confirmation by the recent discovery that it, together with others in that edition, is the work of Waldseemüller. While exhibiting differences in construction from other New World maps, it does present the land connection between the north and the south, leaving to conjecture, however, his belief respecting the western coast.

Nordenskiöld is inclined to the belief that the new maps of this edition of Ptolemy are not the work of Waldseemüller, and he takes from him much of the credit for ability as a cartographer which has been attributed to him. Perhaps the strongest argument supporting a claim for him as the draughtsman of those maps in the 1513 Ptolemy, though it is not the only argument, is the statement to be found in the Strassburg Ptolemy of 1522. In the advertisement of Lorenz Friess, on the verso of the one hundredth leaf of that issue appears the declaration "that these maps were originally constructed by Martin Ilacomylus (Waldseemüller) now deceased, and they have been reduced to a smaller scale than ever before."

The maps of the 1513 edition of Ptolemy show many marks of improvement, especially in matters of detail, over the Ptolemy maps of earlier date. This may be clearly seen in the map of India, the general contour of which we find to be of the Canerio type; so striking, indeed, is the resemblance that one is immediately impelled to the conclusion that a Portuguese map was followed.

It was fifty years ago that Alexander von Humboldt, in his critical studies respecting the historical development of the geographi-

cal knowledge of the New World, expressed the belief that the name America appeared in print for the first time in the 1507 edition of the *Cosmographia*. The passage is one now well known: "And now indeed these parts have been more widely explored, and another, a fourth part, of which we will presently speak more particularly, has been discovered by Americus Vespuccius; I do not see why it may not be permitted to call this fourth part after Americus, the discoverer, a man of sagacious mind, by the name Amerige, that is to say the land of Americus, or America, since both Europe and Asia have obtained their names from women."

But on what map did that name first appear? To some of those for which the claim has been advanced I have referred. That honour, thought Humboldt, belongs to the APIANUS map of the year 1520, to be found in an edition of Solinus, by Camers, of that date; also in an edition of Pomponius Mela by Vadianus of 1522. It can, therefore, claim the distinction of being the oldest map known bearing the name America at the time the discovery by Humboldt was made of the origin of the name.

Apianus clearly borrowed his data from a Portuguese map, but a Portuguese map modified by the German cartographers. The projection was long considered to be somewhat new and original. And yet here, as in other maps to which I have referred, the evidence now appears to be convincing that the Waldseemüller map served as model.

Aside from the facts referred to the map exhibits certain other features which are worthy of notice. A legend on the Southern Continent records the discovery of that region in 1497, but Apianus does not distinguish clearly between Vespuccian and Columbian data, for in the legend below the date he records: "This land, with the adjacent islands, was discovered by Columbus, a native of Genoa, at the command of the King of Castile." He alone of the early cartographers designates the region as the "Province of America."

Apianus made many maps, as we are told, and appears to have preferred this particular projection.

In the course of my correspondence with Tadeus Streicher, of Cracow, Poland, I have from him a copy of a world map which, he writes, he has recently discovered. Details concerning its history he omits. It is a rude woodcut, apparently not one of great importance, but interesting as bearing a striking resemblance to the Waldseemüller map, particularly in the contour of the western world.

Such are the maps of greatest importance produced in Germany

on plane surface and from Portuguese originals, during the first quarter of the sixteenth century, and unsurpassed by those produced in any other of the European countries during the greater part of that time, in so far at least as the maps then produced are now known.

If the St. Dié influence was so marked, as I have indicated, on the maps *in plano*, it is found to be none the less so in a number of globes constructed during the same period, to a few of which only can reference here be made.

Johann Schöner, who, as I have stated, was at one time the possessor of the maps discovered by Professor Fischer, was one of the most distinguished mathematicians of Germany of that period. Cartography was a subject of special interest to him, and no less than five globes are known which on good authority are attributed to him. The first of these, thought to have been constructed in 1515, and to be the globe referred to in a little work of his of that date on cosmography, is preserved in the City of Weimar, and a duplicate, according to Wieser, is to be found in the city of Frankfort.

Schöner observes in his little work that the three parts of the earth Europe, Asia, and Africa are united to form one continent; that a fourth part has been discovered recently, and that it is composed of islands. And this he indicates on his globe, if we may so interpret the fact that he does not connect the land to the north and the south; that he does not leave the western coast-line with simply a meridian boundary, as in the Stobnicza, the Tross Gores, and the so-called Globus Mundus. The entire region is represented as surrounded by the sea. To the southern continent he has given the name America and to the northern Parias. He has inscribed a number of new names, and, what appears to be original with him, he represents an austral continent, which land, "Brasilia Regio" he calls it, has given rise to many questions respecting the origin of the information he appears to have possessed at this early date. Probably he had his information from the rare German pamphlet bearing the title "Copia der newen Zytung aus Presillig landt." The information in this little publication appears to have been originally given by a representative of the rich Welser House of Augsburg, who looked after its interests in Lisbon. "He declares himself to have been a great friend of a captain who said that his expedition had sailed through a strait at the south of Presill, but that he had there been forced by contrary winds to return." The earliest account of the voyage of Magellan says that he had access to a globe

on which were indicated the straits at the south of Brazil; and this may have been the Schöner globe.

In 1520, Schöner produced a globe much larger than the first, and one now much better known. It differs but little, however, from the one of 1515, save in the matter of detailed information given in the legends. And who, having seen the Waldseemüller maps, would call in question the influence of the St. Dié school of cartographers?

There are, however, globes of a somewhat different type which were produced in this period—globes which do not give so much evidence of the Vosgian influence, which clearly are not the work of Schöner, but which probably were the work of German artists.

Of this type the Lenox Globe may first be named, thought by De Costa to be the oldest post-Columbian globe. To the contour of the western land I wish to call attention, likewise to the fact that a north continental land is omitted, and that the large island off the coast of India wants a name by which to distinguish it. That the newly-discovered region was a group of islands seems to have been the opinion of the artist. He has approximately accurate the shape of South America, and to Cuba has given the general appearance we meet with in the Portuguese-German maps.

It was but recently that Tadeus Streicher described for the first time a globe now in the possession of the University of Cracow. This globe constitutes an important part of an old clock, being the box in which the works have been placed. Though the clock is one long in the possession of the University it was not until very recently that the copper ball was found to have engraved upon it a map of the world. So striking is the likeness to the Lenox Globe that at first sight one is inclined to call it an exact duplicate. There is, however, a difference in diameter to be noticed—the Lenox having a diameter of five inches, the Jagellonicus a diameter of about three.

As for the western continental regions the difference is but slight. In nomenclature the smaller appears to be the richer, but a feature of striking interest is to be seen in the legend on the large island southeast of India. Here we read "AMERICA NOVITER REPERTA"—the first time, so far as I have been able to ascertain, that America became mixed up in Asiatic affairs, and there is evidence that Waldseemüller may have been responsible for this.

In his *Cosmographiae* appears this sentence (the order in which the regions are mentioned is, perhaps, not without significance):

In the sixth climatic region, toward the Antarctic, are situated the extreme parts of Africa, lately discovered, and the islands of Zanzibar, Java Minor, and Seula, and

a fourth part of the world which, because Americus discovered it, it is proper to call it Amerige, that is the land of Americus, or America.

The globe gores, thought by Major to be the work of Leonardo da Vinci, because found in a collection of his papers preserved in the archives of Windsor Castle, seem to give evidence of an acquaintance with the Lenox and the Jagellonicus type. The projection is an unusual one. The large western island bears the name America, and it was thought by Major to be the oldest map sketch containing that name. Aside from the appearance of the name America at so early a date—Major thought about 1514, others have placed it about 1518—it has no great significance in the history of the development of the New World cartography.

The influence of the St. Dié School of cartography is easily traceable through the cartography of the century. There is not, however, to be noticed a rigid adherence to the ideas so early expressed respecting the New World, but the form of projection employed and the general contour of the new regions laid down in the early Portuguese and Portuguese-German maps are often repeated.

In 1532, Munster shows a preference for this over the outline as it was now appearing in the Spanish maps, such as the Salviati and the Ribero; and Finæus gives evidence of being strongly influenced by that same Waldseemüller type.

In the little map of Honterus, appearing in his *Rudimenta Cosmographica*, 1546, and several times thereafter, we have as near an approach to an exact copy of the 1507 map as can be found in the large number of imitations. It is not surpassed by the Glareanus maps; but none, so far as I know, had, before the discovery by Professor Fischer, ventured to claim for it the distinction to which I have just referred.

The most striking features of the Lusitano-Germanic cartography, as I have attempted to show, are an indicated continental region in the west, clearly not a part of Asia, a strait between the continental land to north and that to the south connecting Oceanus Occidentalis with Oceanus Orientalis, and the southern region very early taking the name America.

With the exception of the Bartholomew Columbus maps, discovered but a few years ago by Professor Wieser, and Spanish maps, rather than Portuguese, none of the early maps clearly indicate a belief in an Asiatic connection of the western lands. Quite the contrary, as I have stated. But in 1526 we meet with an interesting reversion to the idea which Columbus professed to enter-

tain. By some of the students of that early cartography this reversion is to be attributed to the letters of Cortes, and the observations of Peter Martyr, in his *Enchiridion*. Perhaps it was from Schöner's Globe of 1523, and the small tract which he wrote in that year, that the idea of such an Asiatic connection was derived, which idea for many years found favour with certain cartographers. Calling attention in his tract to the Magellan voyage, and other matters pertaining to western discovery, especially to the discoveries of Columbus, and of Vespuccius, he observes, "They call it America, the fourth part of the globe. But very lately, thanks to the recent navigations accomplished in the year 1519 by Magellan. . . it has been ascertained that the said country was the continent of Upper India, which is a part of Asia." The idea won favour, but it seemed to come and go with the years from this time on, as fact or fancy dictated, until the discovery of Bering put an end to the controversy. The idea should perhaps not be called Lusitanian, but I feel inclined to think a large share of the responsibility for spreading the idea rests upon German students of New World geography, though the question is yet an open one.

In a work by Franciscus Monachus, a Belgian monk, which he called "De Orbis Situ," and which was printed in Antwerp in the year 1526, the idea of an Asiatic connection is first clearly expressed on a map. In the text Franciscus takes occasion to criticise the Ruysch map of 1508, which indicated that the north continental region is separated from the south. He further states, what he finds to be a common belief, that a sea exists between the New and the Old World—that is, between America and Asia, but to this opinion he likewise raises objection.

The map, therefore, though apparently of little significance, has a certain importance by reason of this indicated Asiatic connection, by reason of its presentation at this early date of an austral continent, and the continuous coast-line from the extreme north to the extreme south and its west coast-line extending to join Asia.

There were many maps drawn before the close of the century, which, like the Franciscus, indicate this Asiatic connection. However, by 1525 a Spanish type of map of the New World was coming into prominence, and was finding a wide acceptance. It is best represented in such maps as those of Ribero, of Agnese, and of Cabot, so far, at least, as the eastern coast-line of the New World was concerned.

I have given here but a brief review of some of the more important early maps of discovery and exploration in the New World,

most of which are of the Portuguese-German type, but I trust the sketch is sufficient to give a fair understanding of the significance attaching to this cartography. With the 1538 map of Mercator I may fittingly close. It is one of the first of that great cartographer, and a copy of it is now in the possession of your own Society.

Waldseemüller applied the name America to the southern continent. Mercator gave it also to the northern. Waldseemüller evidently thought the new country a region separated from Asia, and this is an opinion also expressed by Mercator in his map. Passing over the idea of Franciscus that the new country was a part of Asia, and the Spanish idea that such connection was possible though unknown, Mercator gave the western continent a contour approaching accuracy.

NEW BOUNDARY BETWEEN BRAZIL AND BOLIVIA.

(MAP, Page 256.)

The long dispute between Brazil and Bolivia over the possession of the large territory known as the Acre district has at last been settled by the adoption of a boundary treaty, signed at Petropolis, on November 17 last, ratified later by the respective Governments and proclaimed on December 28. Our map, showing the new boundaries established by this treaty, has been reproduced from the official map issued by Brazil. The treaty not only adjusts the boundary questions relating to the northern frontier of Bolivia, but also the smaller question concerning the boundary between the two countries south of Matto Grosso. An inset on the map shows the slight changes in the latter part of the boundary.

The treaty provides that a Mixed Commission, appointed by the two Governments, shall demarcate the new frontier. Their work may slightly change the position of parts of the boundary, for the reason that the geographical data at hand, when the treaty was made, were not sufficient at several points for a sharp definition of the frontier. The treaty provides, for example, that from the source of the Iquiry River to Bahia Creek the boundary shall follow the highest elevations of the land or a straight line, as the boundary commissioners shall deem most convenient.

If any controversy arises between the Brazilian and Bolivian commissions which cannot be settled by the two Governments, it is to be submitted to the decision of a member of the Royal Geographical Society of London, chosen by its President and the Council.